

[Amendment under PCT Article 34 Filed on March 26, 2004]

What is claimed is:

1 1. A porous substrate, comprising a plurality of porous layers
2 thereon, wherein the average opening diameter of pores in a porous
3 layer of said plurality of porous layers positioned in an
4 outermost surface is smaller than the average diameter of pores
5 in a porous layer of said plurality of porous layers positioned
6 on a substrate side relative to said porous layer positioned in
7 said outermost surface.

1 2. A porous substrate, comprising a plurality of porous layers
2 thereon, wherein the average opening diameter of pores in a porous
3 layer of said plurality of porous layers positioned in an
4 outermost surface is smaller than the average diameter of pores
5 in a porous layer of said plurality of porous layers positioned
6 on a substrate side relative to said porous layer positioned in
7 said outermost surface; and the volume porosity of said plurality
8 of porous layers is 10 % - 90 %.

1 3. A porous substrate, comprising two porous layers thereon,
2 wherein the average opening diameter of pores in a first porous
3 layer of said two porous layers positioned in an outermost surface
4 is smaller than the average diameter of pores in a second porous
5 layer positioned on a substrate side relative to said first porous
6 layer; and more than 50 % of said pores in said first porous layer
7 penetrate from the surface of said first porous layer to the

8 interface between said first and second porous layer.

1 4. A porous substrate, comprising two porous layers thereon,
2 wherein the average opening diameter of pores in a first porous
3 layer of said two porous layers positioned in an outermost surface
4 is smaller than the average diameter of pores in a second porous
5 layer positioned on a substrate side relative to said first porous
6 layer; more than 50 % of said pores in said first porous layer
7 penetrate from the surface of said first porous layer to the
8 interface between said first and second porous layer; and the
9 volume porosity of said first and second porous layer is 10 %
10 - 90 %.

1 5. The porous substrate according to claim 3 or 4, wherein
2 said first porous layer comprises a metal material.

1 6. The porous substrate according to claim 3 or 4, wherein
2 said first porous layer comprises a metal oxide, a metal nitride,
3 or a metal carbide.

1 7. The porous substrate according to claim 3 or 4, wherein
2 said second porous layer comprises a semiconductor material.

1 8. The porous substrate according to claim 3 or 4, wherein
2 said second porous layer comprises a group III nitride series
3 compound semiconductor material.

1 9. The porous substrate according to claim 3 or 4, wherein
2 said first porous layer comprises TiN or Pt, and said second

3 porous layer comprises GaN.

1 **10.** [Amended] The porous substrate according to claim **3** or **4**,
2 wherein said average opening diameter of said pores in said first
3 porous layer is not more than 1 μ m.

1 **11.** The porous substrate according to claim **3** or **4**, wherein
2 the film thickness of said first porous layer is not more than
3 1 μ m.

1 **12.** A fabrication method for a porous substrate, comprising
2 growing two or more different material layers on a substrate,
3 heating said each layer, and thereby forming two or more porous
4 layers with pores therein.

1 **13.** A GaN series semiconductor layered substrate, comprising
2 a GaN series semiconductor layer grown on a porous substrate
3 defined in any one of claims **1-11**.

1 **14.** A fabrication method for a GaN series semiconductor
2 layered substrate, comprising growing two or more different
3 material layers on a substrate, heating said each layer, thereby
4 forming a porous substrate with two or more porous layers having
5 pores therein, and growing a GaN semiconductor layer on that
6 porous substrate.